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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,625	11/05/2003	Jianmin Wang	50103-522	4865

49745 7590 09/26/2006
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EXAMINER

AKANBI, ISIAKA O

ART UNIT PAPER NUMBER

2877

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/700,625	WANG ET AL.	
	Examiner	Art Unit	
	Isiaka O. Akanbi	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>05 November 2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement file 05 November 2003 has been entered and reference considered by the examiner.

Drawings

The examiner approves the drawings filed 05 November 2003.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosencwaig et al. (4,522,510).

Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosencwaig. The reference of Rosencwaig teaches of an apparatus/method for measuring surface topography of a surface of claims 1 and 11, comprising a linearly polarized light source (20) that generates a light beam, optics (16/28) that focus the light beam on a surface (18) to be measured such that a normally incident beam deflection is provided and a position sensitive detector (32) positioned to detect the reflected beam (fig. 1). The reference of Rosencwaig is silent regarding polarization optics such that the incident beam has a first polarization and a reflected beam from the surface has a second polarization different from the first polarization. The use of polarization optics to change polarization state of incident polarized beam is known in the art. Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to provide the optics that include polarization optics such that the incident beam has a first polarization and a reflected beam from the surface has a second polarization different from the first polarization for the purpose of providing a more precisely defined polarized beam.

Claims 2-10 and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosencwaig et al. (4,522,510) in view of Toida (5,428,447).

Claims 2 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosencwaig in view of Toida, as applied to claims 1 and 11 above. The reference of Rosencwaig teaches of the features of claim 2, comprising a polarized light beam source (20), optics (16/28), however the reference of Rosencwaig is silent regarding the optics that include a half-wave plate that receives the light beam. The reference of Toida teaches of half-wave plate (128) that receives the light beam (col. 29, line 5-10). It would have been obvious to one having ordinary skill in the art at the time of invention to provide optics that include a half-wave plate that receives the light beam because it is easier to adjust/rotates the direction of the polarization of the beam than adjusting the source.

As to claims 3 and 13, Rosencwaig and Toida disclose everything claimed, as applied to claims 2 and 12 above, in addition Rosencwaig discloses wherein the optics further include a long working microscope objective (16) positioned to receive the light beam and output a converging light beam (fig. 1)(col. 2, line 28-31).

As to claims 4 and 14, Rosencwaig and Toida disclose everything claimed, as applied to claims 3 and 13, in addition Rosencwaig discloses wherein the optics further include a polarizing beam splitter (24) positioned to receive as an input the and produces as an output light beam with the first polarization and wherein the step of directing a beam of light includes transmitting the converging beam through a polarizing beam splitter in a direction normally incident to the surface (18)(fig. 1).

As to claims 5 and 15, Rosencwaig and Toida disclose everything claimed, as applied to claims 4 and 14, in addition Rosencwaig discloses wherein the optics further include a quarter-wave plate (26) positioned to receive as an input the light beam with the first polarization and output a beam in a direction normally incident to the surface, the reflected beam from the surface being reflected by the quarter-wave plate towards the position sensitive detector (32) and wherein the step of changing the polarization includes passing the reflected beam through a quarter-wave plate that changes the polarization of the reflected beam to the second polarization from the first polarization (fig. 1).

As to claims 6 and 16, Rosencwaig and Toida disclose everything claimed, as applied to claims 5 and 15, comprising a half-wave plate and wherein the step of directing the reflected beam includes reflecting the reflected beam perpendicularly at the polarizing beam splitter (24) towards the position sensitive detector (32)(fig. 1). The reference of Rosencwaig and Toida is silent regarding wherein the first polarization is p-polarization and the second polarization is s-polarization because there is no reason to specify which polarization is first or second since the wave-plate can be set to a default or un-actuated polarizing state (s or p). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to provide a first polarization that is p-polarization and a second polarization that is s-polarization for the purpose of providing a light beam having a polarization state (p or s) at a level determined by the detector.

As to claim 7, Rosencwaig and Toida disclose everything claimed, as applied to claim 6, in addition Rosencwaig discloses wherein the polarizing beam splitter (24) includes a 45° reflective surface positioned to reflect the beam reflected from the surface in a direction perpendicular to the direction normally incident to the surface (fig. 1).

As to claim 8, Rosencwaig and Toida disclose everything claimed, as applied to claim 3, in addition Rosencwaig discloses wherein the long working microscope objective (16) outputs the converging light beam in a direction perpendicular to a normally incident direction to the surface.

As to claim 9, Rosencwaig and Toida disclose everything claimed, as applied to claim 8, in addition Rosencwaig discloses wherein the optics further include a polarizing beam splitter (24) having a 45° reflective surface positioned to reflect the converging light beam from the long working microscope objective (16) towards the surface (32) in a normally incident direction to the surface.

As to claim 10, Rosencwaig and Toida disclose everything claimed, as applied to claim 9, in addition Rosencwaig discloses wherein the optics further include a quarter-wave plate (26) positioned to receive as an input the light beam with the first polarization from the polarizing beam splitter and output a beam that is normally incident of the surface, with a reflected beam from the surface having the second polarization and directed by the quarter-wave plate through the polarizing beam splitter in a direction normal to the surface towards the position sensitive detector (32)(fig. 1).

As to claim 17, Rosencwaig and Toida disclose everything claimed, as applied to claim 13, in addition Rosencwaig discloses wherein the step of directing a beam of light includes directing the converging (16) beam in a direction perpendicular to a normally incident direction to the surface towards a reflective surface of a polarizing beam splitter (24) that reflects the converging beam towards the surface (32) in a direction normally incident to the surface (fig. 1).

As to claim 18, Rosencwaig and Toida disclose everything claimed, as applied to claim 18, in addition Rosencwaig discloses wherein the step of directing the reflected beam includes transmitting the reflected beam through the polarizing beam splitter (24) in a normal direction to the surface towards the position sensitive detector (32).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosencwaig et al. (4,522,510).

As regard to claim 19, Rosencwaig discloses an arrangement for measuring topography of an ultra-smooth surface comprising of the following:

a source (20) of laser light and means (24/28/16) for directing the laser light on the ultra-smooth surface and measuring the topography of the ultra-smooth surface.

As to claim 20, according to claim 19, Rosencwaig discloses wherein the means includes an optical arrangement configured to direct the laser light in a normally incident direction to the ultra-smooth surface (18)(fig.1).

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art apparatus/method for measuring surface topography of a surface that may anticipate or obviate the claims of the applicant's invention.

Conclusion

Fax/Telephone Information

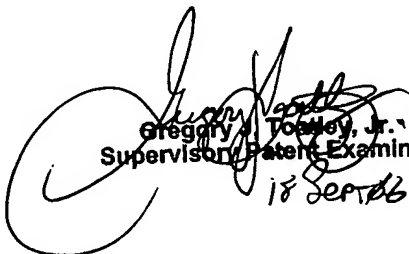
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2059. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi

September 8, 2006


Gregory J. Toatley, Jr.
Supervisory Patent Examiner
18 Sept 06